

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Applicant: Paul A. Kohl et al.

Serial No.:

Filed:

For: FABRICATION OF SEMICONDUCTOR DEVICES WITH AIR GAPS FOR ULTRA LOW CAPACITANCE
INTERCONNECTIONS AND METHODS OF MAKING SAME

Art Unit:

Examiner:

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

1. Pursuant to 37 C.F.R. 1.97 and 1.98, and in compliance with 37 C.F.R. 1.56, the Office's attention is directed to the patents, pending applications, publications and other information listed on the attached PTO-1449. A copy of each listed document is enclosed, except for (a) those previously cited or submitted to the Office in the following application(s) upon which this application relies for an earlier filing date under 35 U.S.C. 120, and (b) any U.S. patent or U.S. patent application publication if the present application was filed after June 30, 2003 or entered the national stage under 35 USC § 371 after June 30, 2003:

Serial No.: 09/945,305 _____

Filing Date: August 31, 2001 _____

Regarding any document, publication or other information for which a date is not given on the attached PTO-1449, Applicant(s) believe(s) the same may qualify as "prior" art to this application and should be treated accordingly, although Applicant(s) reserve(s) the right to contest the prior art status of any document, publication or information, should issue arise.

2. Regarding each listed document that is not in the English language, an English-language translation accompanies this Statement as indicated on the attached PTO-1449 or a concise explanation of the relevance of the document is set forth in the following document(s):

(a) ____ A copy of each English language version of a search report (or EPO Search Report) indicating the degree of relevance found by the foreign office of each document being submitted from the search report, is being submitted herewith or has previously been submitted.

(b) ____ Attached is a "Concise Explanation of Relevance of Non-English Language Documents".

3. Pursuant to 37 C.F.R. 1.97(b) this Statement is being filed (one must be checked):

(a) X Within 3 months of the filing date, date of entry into the National Stage, or filing date of a CPA.

(b) ____ Before the mailing date of a first Office Action on the merits. If this Statement is not filed before the mailing date of a first Office Action on the merits, the required certification is given below or, in the absence thereof, the Office is authorized to charge the required fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988 for consideration of this Statement.

(c) ____ Before the mailing date of a first Office Action on the merits after a first or second submission after final rejection under 37 C.F.R. 1.129(a).

(d) ___ After the period set forth in 37 C.F.R. 1.97(b) but before the mailing date of either a final action or a notice of allowance.

(1) ___ The required certification is given below, or

(2) ___ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(p) for consideration of this Statement, or

(3) ___ Charge the fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988

(e) ___ After the mailing date of either a final action or a notice of allowance, but before payment of the issue fee. Petition hereby is made for consideration of this Statement and the required certification is indicated below.

(1) ___ Enclosed is a check covering the fee set forth in 37 C.F.R. 1.17(p), or

(2) ___ Charge the fee set forth in 37 C.F.R. 1.17(p) to Deposit Account No. 18-0988.

4. Certification (if applicable)

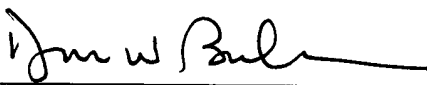
(a) ___ The undersigned hereby certifies that each item of information contained in this Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than 3 months prior to the filing of this Statement.

(b) ___ The undersigned hereby certifies that no item of information contained in this Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the undersigned's knowledge after making reasonable inquiry, no item of information contained in this statement was known to any individual designated in 37 C.F.R. 1.56(c) more than 3 months prior to the filing of this Statement.

5. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 18-0988.

Respectfully Submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

By 

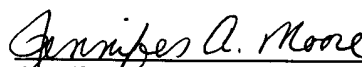
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(216) 621-1113

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence (along with any paper referenced as being attached or enclosed) is being deposited on the below date with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: 8-25-03


Jennifer A. Moore

Form PTO-1449 (Modified) LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	Atty Docket No. PRMSP0285USB	Serial No.
	Applicant: Paul A. Kohl et al.	
	Filing Date	Group

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date (MM/YYYY)	Name	Class	Sub-class	Filing Date if Appropriate
	3,890,636	06/1975	Harada et al.			
	3,933,772	1/1976	Takahashi et al.			
	4,460,712	7/1984	Blizzard et al.			
	4,923,678	5/1990	Benedikt et al.			
	4,987,101	1/1991	Kaanta et al.			
	5,011,730	4/1991	Tenney et al.			
	5,049,632	9/1991	Asrar			
	5,103,288	4/1992	Sakamoto et al.			
	5,117,327	5/1992	Asrar. et al.			
	5,135,595	8/1992	Acocella et al.			
	5,139,851	8/1992	Acocella et al.			
	5,139,852	8/1992	Baise et al.			
	5,180,754	1/1993	Morita et al.			
	5,277,725	1/1994	Acocella et al.			
	5,266,126	11/1993	Deguchi			
	5,274,026	12/1993	Benedikt et al.			
	5,324,683	6/1994	Fitch et al.			
	5,358,975	10/1994	Anderson			
	5,461,003	10/1995	Havemann et al.			
	5,468,819	11/1995	Goodall et al.			
	5,508,542	4/1996	Geiss et al.			
	5,569,711	10/1996	Yamamoto et al.			
	5,585,433	12/1996	Yamamoto et al.			
	5,635,419	6/1997	Geiss et al.			
	5,641,712	6/1997	Grivna et al.			

Examiner Initial	Document Number	Date (MM/YYYY)	Name	Class	Sub-class	Filing Date if Appropriate
	5,679,444	10/1997	Davis et al.			
	5,681,900	10/1997	Murakami et al.			
	5,700,844	12/1997	Hedrick et al.			
	5,709,805	1/1998	Davis et al.			
	5,744,399	4/1998	Rostoker et al.			
	5,756,021	5/1998	Hedrick et al.			
	5,767,014	6/1998	Hawker et al.			
	5,773,197	6/1998	Carter et al.			
	5,776,990	7/1998	Hedrick et al.			
	5,869,880	2/1999	Grill et al.			
	5,883,219	3/1999	Carter et al.			
	5,895,263	4/1999	Carter et al.			
	5,953,627	9/1999	Carter et al.			
	5,962,113	10/1999	Brown et al.			
	6,071,180	6/2000	Liu			
	6,303,464	10/2001	Gaw et al.			
	6,162,838	12/2000	Kohl			
	6,165,890	12/2000	Kohl et al.			

FOREIGN PATENT DOCUMENTS

Examiner Initial	Document Number	Date (MM/YYYY)	Country	Class	Sub-class	Translation	
						Yes	No
	98/32169	07/1998	WO				
	0 997 497 B1	05/2000	Europe				
	0936230	10/1997	Europe				
	9720871	6/1997	WO				
	0445755	3/1991	Europe				
	0881668	5/1998	Europe				
	63099206	10/1986	Japan				

OTHER ART

Examiner Initial	Author, Title, Date, Pertinent Pages, etc.
	PCT International Search Report, for application number PCT/US99/12467 dated May 6, 1998
	IBM Technical Disclosure Bulletin, LOW DIELECTRIC CONSTANT INORGANIC INSULATORS FOR BEOL AND PACKAGING APPLICATIONS, Vol.. 37
	IBM Technical Disclosure Bulletin, REDUCED CAPACITANCE INTERCONNECT SYSTEM USING DECOMPOSITION OF AIR GAP FILLER MATERIAL, September 1995
	Materials Research Society, CONTROLLING POROSITY IN BRIDGED POLYSILSEQUIOXANES THROUGH ELIMINATION REACTIONS, Vol 435, p.277-282
	IEEE Transactions on Electron Devices, USE OF AS LOW-K INTERLAYER DIELECTRIC IN LSI'S: DEMONSTRATION OF FEASIBILITY, Vol. 44, No. 11, November 1997 p. 1-7
	IEEE Electron Device Letters, AIR-GAP FORMATION DURING IMD DEPOSITION TO LOWER INTERCONNECT CAPACITANCE, Vol. 19, No. 1, January 1998 p. 1-3
	Electrochemical and Solid-State Letters, LOW <i>k</i> , POROUS METHYL SILSEQUIOXANE AND SPIN-ON-GLASS, 1999, p. 77-79
	Technology News, Wafer Processing, THE NEW LOW - <i>k</i> CANDIDATE: IT'S A GAS, Page 38, March 1999
	Materials Research Society, Symposium Proceedings, LOW-DIELECTRIC CONSTANT MATERIALS IV, Vol.. 511, 1998
	Advanced Materials, Research News, TEMPLATING NANOPOROSITY IN THIN-FILM DIELECTRIC INSULATORS, 1998, p. 1049-1053
	Deposition, AIR GAPS LOWER <i>k</i> OF INTERCONNECT DIELECTRICS, February 1999, p. 51-58
	Communication relating to the results of the partial International Search for International Application No. PCT/US01/27224 mailed 16/09/2002.

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Information Disclosure Statement PTO-1449 (Modified)

The identification of any reference is not intended to be, and should not be understood as being, an admission that such publication, in fact, constitutes "prior art" within the meaning of applicable law since, for example, a given reference may have a later effective date than first seems apparent or the reference may have an effective date which can be antedated. The "prior art" status of any reference is a matter to be resolved during prosecution.

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